



MD 5 Great Mills Improvement Project

*Adding Capacity, Improving
Safety in Rural Maryland*

MDOT MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

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1. Project Description



PROJECT OVERVIEW

The Great Mills project provides critical multi-modal safety and traffic solutions at a key intersection in St. Mary's County, a rural county in Maryland's western shore peninsula undergoing major residential, workforce, and commercial growth. The Project is within the Census-designated **Lexington Park-California-Chesapeake Ranch Estates, MD Urbanized Area**. The proposed improvements will facilitate the continued growth in the region and urbanized area by ensuring safe and efficient connectivity to key military and private sector employment centers. The Project Area encompasses Maryland Route 5 (MD 5), or Point Lookout Road, between MD 246 (Great Mills Road) and MD 471 (Indian Bridge Road) in Great Mills, St. Mary's County (the County). The Project has advanced since last year's application. The Maryland Department of Transportation State Highway Administration (MDOT SHA) has advanced design on the roadway improvements and bridge replacement, refined costs estimates, and acquired right-of-way for the Project. The Project was the **St. Mary's County top funding priority** in its 2019 transportation priority letter.

Together, these investments significantly improve mobility and safety in this rural community. BUILD funds will unlock the Project's many benefits that will:

- Provide well-designed streets that support safe walking, biking, and transit use, expanding transportation options
- Reduce the high crash rate on MD 5
- Provide more reliable travel times
- Reduce delay, particularly during commute times, to improve access to NAS PAX and other military installations
- Support projected traffic growth of 27%
- Improve critical connections to military facilities with improved traffic patterns, travel time, and safety
- Support disadvantaged and minority businesses
- Use innovative construction processes
- Provide new and innovative stormwater management facilities and landscaping

It will address existing safety, congestion, access, and connectivity issues present in the Project Area by improving road geometry, replacing an aging bridge that floods, and improving bicycle and pedestrian access.

Home to the first Maryland colony established in the 17th century – one of America's 13 original colonies – St. Mary's County is home to a unique and historic culture of Chesapeake Bay tidewater farming, fishing, and crabbing communities. However, over the past five decades, the County has undergone a major transformation; the population has doubled since 1970. **In the past 10 years, the County has grown over 7 percent – one of the highest rates in Maryland and above the national average of 5.96 percent.** This growth is due in part to growing military bases, which are the major economic drivers for the region, and associated defense contractor businesses. The population of long-distance commuters who travel from St. Mary's County to Washington, D.C., is also rising.



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While this growth has brought expanding opportunities for residents, it has also strained the transportation infrastructure. Overall traffic operations are approaching failing conditions, with substantial peak-period delays. Further, this growth is expected to continue, as new commercial and residential developments planned near the community of Great Mills are expected to generate a **27-percent increase in traffic by 2040**.

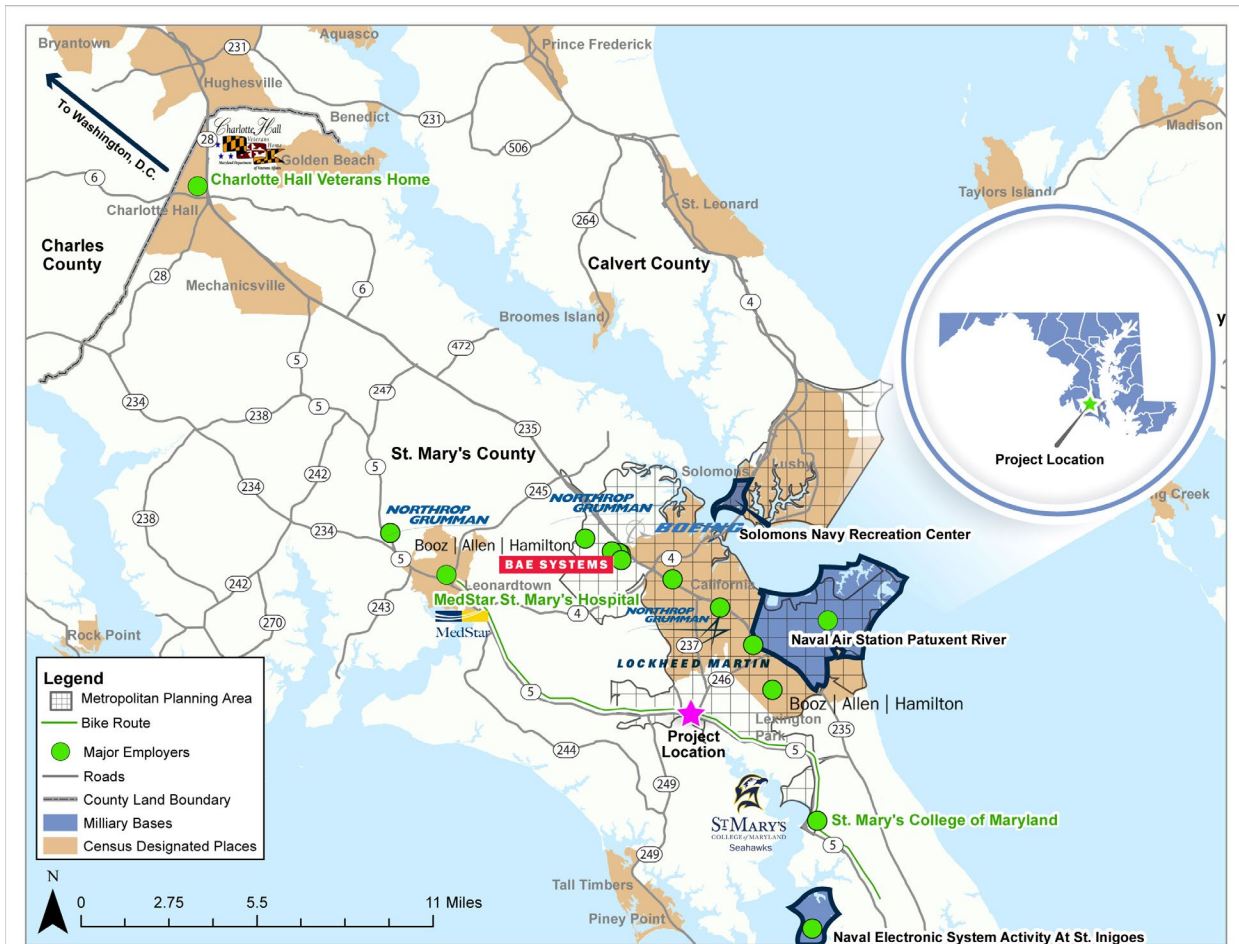


Figure 1: Project Location

In addition to meeting the transportation needs of a growing population, the project will address substantial safety concerns. The roadway experiences higher traffic volumes and speeds than it was designed to support, which adversely impacts traffic operations and creates safety concerns. Today, the **crash rate in the Project Area is higher than the statewide average** for similar types of roadways and growth will exacerbate these issues for motorists, bicyclists, and pedestrians. Addressing missing connections will improve mobility for pedestrians, bicyclists, and transit users. The Project will also address flooding issues that require motorists to make an 14-mile detour when the roadway is impassable.

This rural traffic mitigation and safety project is designed to support and stimulate economic growth in this growing area. The MD 5 Great Mills Improvement Project (the Project) will mitigate congestion, address safety concerns, improve connectivity to nearby military bases, and provide access to job centers. With a Better Utilizing Investments to Leverage Development (BUILD) grant in place, these improvements will support this growing rural community while preserving residents' quality of life and connection to this nationally significant historic place.



MDOT SHA, in partnership with St. Mary's County, Maryland, requests **\$10.03 million** in BUILD grant funds, representing 59% of total project costs. These funds will complete the funding package for a \$17 million project that confronts existing challenges in our State highway system and prepares for the growing military and civilian traffic, as well as increasing development, job opportunities, and traffic volume.

The Project comprises five coordinated, complementary infrastructure investments that work together to address growing challenges that are impacting the Project Area's safety, state of good repair, economic competitiveness, environmental sustainability, and quality of life. Built together, the impact of the five components detailed below is greater than the sum of the individual parts; built alone, each will not deliver the benefits to the same extent as when built together along the same time frame. Further, by leveraging these management and operations improvements together, the Project minimizes the overall duration of construction and provides a lower overall cost. Components are detailed below and depicted in Figure 2.

- A. Widen and resurface MD 5 (Point Lookout Road) from two lanes to an undivided four-lane closed section roadway
- B. Add outside travel lanes with five-foot bicycle lanes
- C. Add a five-foot wide sidewalk along both sides of MD 5, while providing Americans with Disabilities Act (ADA)-compliant ramps and installing pedestrian crossing signals
- D. Replace an existing bridge over the St. Mary's River at the same grade
- E. Implement drainage improvements, new stormwater management facilities, erosion control, landscaping and stream restoration

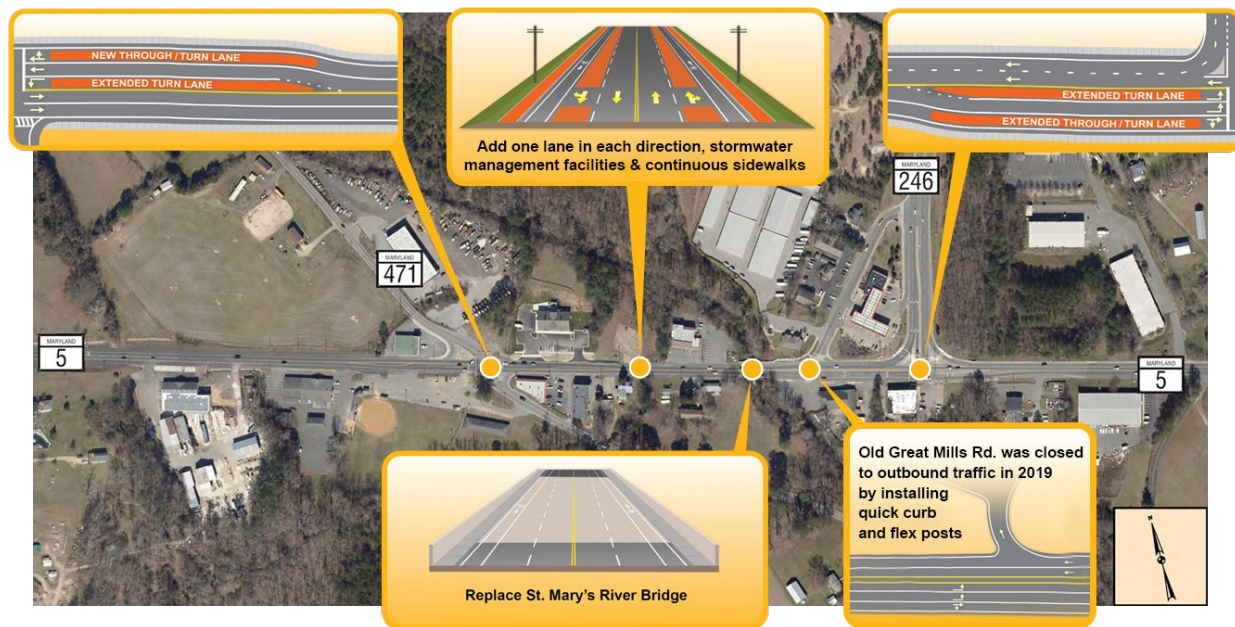


Figure 2: Great Mills Project Elements



PROJECT NEED

This Project addresses several transportation challenges that are impacting this rural community's ability to fully realize the benefits of expanding job opportunities and economic growth without encumbering mobility and quality of life. The County has acknowledged the pressing need to fund this project by including it in the 2019 transportation priority letter as its top funding priority and in the Calvert-St. Mary's Metropolitan Planning Organization's (C-SMMPO) Long Range Transportation Plan.

St. Mary's County has the fastest-growing workforce in the State of Maryland. An April 2019 Forbes article stated that, "California-Lexington Park [in which the Project is located] in Maryland emerged as the city with the highest share of high-tech jobs in its local economy in the country." The high concentration of science, technology, engineering, and math (STEM) jobs in this region is driven by the presence of several critical military installations in Southern Maryland. The Naval Air Station Patuxent River Main Site (NAS PAX) in Lexington Park is three miles east of the Project Area. The Webster Outlying Landing Field (WOLF) at St. Inigoes, which houses a Coast Guard Station and an Army National Guard UAS program, is located 11 miles to the south of the project.

These military installations employ 21,500 active-duty personnel, civilians, and contractors, many of whom rely on MD 5 for access to destinations around the County; Washington, D.C.; Virginia; and Maryland. The Great Mills project will improve traffic patterns, travel time, and safety that directly impact this critical – and growing – workforce in St. Mary's County.

Table 1. Key Statistics in the Project Area, including Level of Service (LOS)

Safety			Traffic	
Crashes (09-'18)	Crashes Resulting in Fatalities or Injuries	Pedestrians	Annual Hours Delay	No-Build LOS on MD 5
162	61 (8 serious injuries, 0 fatalities)	2 (Non-fatal, in 2010 and 2018)	23,280	E/F (MD 471) C/F (MD 246)

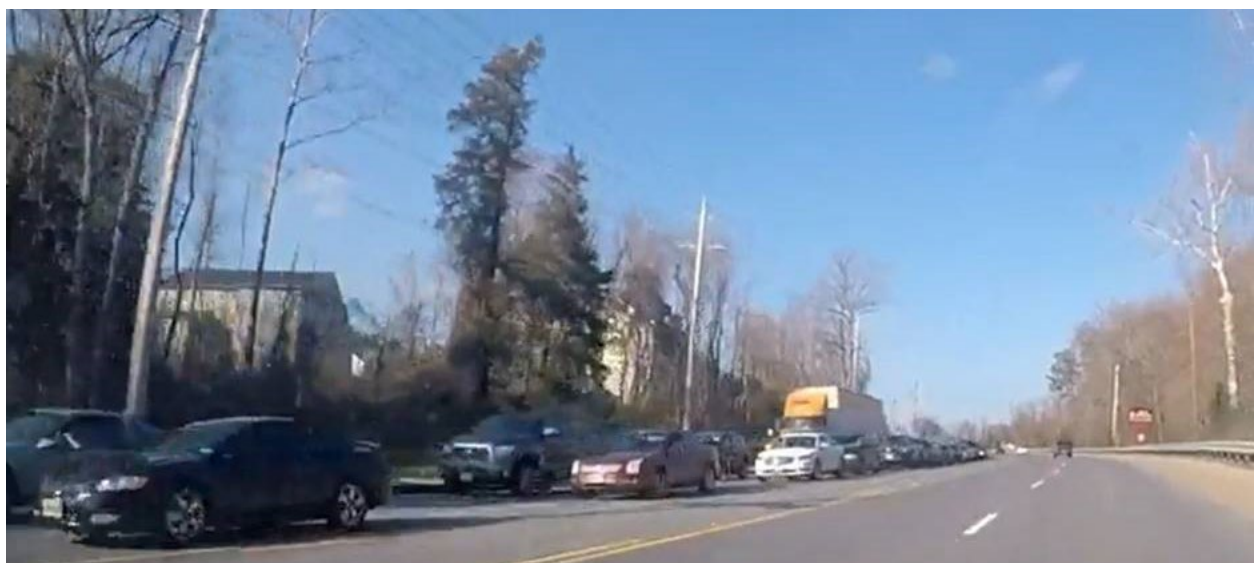


Figure 3: Traffic Congestion Along MD 5



Transportation Challenges the Project Will Address

The Project will address five key transportation challenges that are present in the Project Area that impact residents' quality of life and access to opportunities, as shown below.

Failing Levels of Service at Intersections and Substantial Peak-Period Congestion

The intersections of MD 5/MD 471 and MD 5/MD 246 are currently reaching or exceeding capacity, with LOS D and E in the AM and PM peak. The MD 5/MD 471 intersection is projected to reach a failing level of service by 2040, which severely limits mobility through this growing rural area. There are multi-mile long traffic queues at these intersections during peak hours. Key performance measures for the MD 5/MD 471 and Flat Iron Road intersection, including Level of Service (LOS) are presented in Table 2; key statistics for the MD 5/MD 246 intersection are in Table 3.

Table 2. Key Statistics for MD 5/MD 471 and Flat Iron Road Intersection

Daily Traffic Volume	Ave. Delay – AM Peak	LOS – AM Peak	Ave. Delay – PM Peak	LOS – PM Peak	Projected 2040 LOS
19,475 vehicles	73.2 seconds	E	40.5 seconds	D	F

Table 3. Key statistics for MD 5/MD 246 Intersection

Daily Traffic Volume	Ave. Delay – AM Peak	LOS – AM Peak	Ave. Delay – PM Peak	LOS – PM Peak	Projected 2040 LOS
18,600 vehicles	44.3 seconds	D	37.9 seconds	D	D

Peak hour observations at the MD 5/MD 246 intersection indicate that during the PM peak, the southbound queues along MD 246 are extensive, particularly for the right turns to westbound MD 5. In addition, the westbound MD 5 PM peak queues are extensive at this intersection, particularly westbound through-traffic. Consistent cycle failures were observed for this movement. The bridge over St. Mary's River acts as a bottleneck along westbound MD 5, since traffic on two through lanes merges into one lane approaching the bridge.



Figure 4: Southbound Queues on MD 246 Approaching Westbound MD 5



Traffic volumes are projected to increase by 27 percent by the year of 2040. This projection is based on the calibrated regional travel forecast model developed by MDOT SHA and the Metropolitan Washington Council of Governments (MWCOCG). The model accounts for projected development, employment, and population growth. If capacity is not improved in the study area, traffic operations will worsen at the MD 471/Flat Iron Road intersection where the overall delay will double in the AM peak hours and triple in the PM. The delay at this intersection will impact the MD 246 intersection because these two intersections function as a system. The proposed intersection improvements will have significant impacts on the LOS of the network. Without the Project improvements, the MD 471 eastbound approach will fail during both AM and PM peaks; the westbound approach will fail during the PM peak. Traffic operations on the MD 246 approaches will maintain similar conditions. The intersection's northbound approach will degrade from LOS D to LOS E, and the southbound will worsen from LOS C to LOS D; however, not enough to change the overall intersection LOS.

A major benefit from this project is increasing throughput capacity on MD 5 between the two intersections, which will significantly reduce travel time by an estimated 8.5 minutes and provide additional capacity for the traffic queues. Since the two signals are so close to each other, currently the queues from one intersection will spill back into the other. The coordinated investments presented in **this Project will significantly reduce travel time and elevate the level of service in the Project Area** to LOS C in the morning and evening at MD 471 and MD 246, meeting MDOT SHA's goals as stated in the Purpose and Need Statement. The bridge replacement and associated roadway widening adds capacity that will, in turn, reduce recurring congestion.

High Crash Rates

The constriction of daily commuter traffic down to two lanes on MD 5 and Great Mills Road leads to frequent crashes resulting from inattention, abrupt stops and impatient driving. The overall crash rate in the Project Area is 40 percent higher than the statewide average for similar roadways. Specifically, rear-end, left-turn, and sideswipe collisions within the Project Area are significantly high. Table 4 presents key statistics regarding the crash rates within a half-mile of the Project segment around the intersections of MD 5 with MD 246 and MD 471.

Table 4. Crashes in the Project Area, 2009-2018

Total Crashes	Crashes Resulting in Injuries	Injuries from Crashes	Projected Crash Reduction with Project
162	61	85	20%

The expansion of the roadway and changes of roadway geometry on MD 5, in addition to the improved facilities for bicycles and pedestrians, **projected to result in a 21 percent reduction in rear ends and a 15 percent reduction in left turn crashes. This results in an overall Project crash reduction of approximately 20 percent, or 3 incidents per year.**



Figure 5: Flooding at St. Mary's River Bridge



Figure 6: Pedestrians on St. Mary's Bridge within Project Limits

Roadway Flooding

The majority of the Project Area is within the 100-year floodplain. MDOT SHA records indicate that MD 5 and the approach roads have had to be **closed to traffic from time to time due to roadway flooding**. There are no alternative routes that do not add large travel distances and time. The fastest alternate route adds 14 miles and at least 20 minutes to reach the other side of the bridge on MD 5. The water levels on MD 5 can be in the range of two inches to sixteen inches during these events. The areas that have been closed due to flooding include MD 5 from MD 246 to the western edge of the project area, and north along MD 246 and MD 471 approximately one-third of a mile.

The Project will replace the St. Mary's River Bridge, to accommodate a five-year design storm without overtopping the bridge or touching the bridge superstructure.

Disconnected Sidewalks/Bicycle Lanes

Most of this section of MD 5 through the residential and commercial district of Great Mills does not have continuous accommodations for pedestrians and cyclists. There are limited sidewalks provided for pedestrians in the Project Area. Sidewalks are provided in an inconsistent manner as required by business development and redevelopment. Additionally, the St. Mary's River bridge provides a raised sidewalk area on each side of the bridge, but neither provides adequate Americans with Disabilities Act (ADA) accommodations.

These **incomplete pedestrian and bicycle connections exacerbate the community's lack of robust transportation options**. St. Mary's

Transit System (STS) operates the Route 3 – Great Mills Route along MD 5 and MD 246, which has seen increasing ridership. However, there are no convenient nearby Park and Ride lots for ride-sharers and accessing bus stops is challenging without sidewalk infrastructure. There are no shuttle services currently planned or in operation for use of the employees of NAS PAX. The lack of pedestrian and bicycle facilities further constrains transportation choices. This is particularly burdensome to those who may not have access to a personal vehicle or are unable to drive.

The Project specifically invests in infrastructure to support pedestrian and bicyclist connectivity, access, and safety. BUILD funds will enable creating new five-foot bicycle lanes and new five-foot wide sidewalks along both sides of MD 5. Further, ADA ramp improvements and new pedestrian crossing signals and push buttons facilitate safe access for users of all abilities.



PROJECT HISTORY AND ANY PREVIOUSLY COMPLETED COMPONENTS

The Project complements an earlier phase of work completed in 2019 that closed outbound traffic at Old Great Mills Road just east of the St. Mary's River Bridge to prevent drivers from trying to “queue jump” the backed-up traffic on MD 5 at the MD 246 intersection.

THE PROJECT'S BENEFITS FOR COMMUNITIES IN RURAL AREAS

This Project directly benefits the rural community in and around Great Mills. New commercial and residential developments planned near and within the Great Mills Project Area are expected to generate higher traffic volumes and congestion, especially during peak travel periods. High traffic volumes resulting from existing development already contribute to operational failure. The additional traffic generated by future development will worsen congestion along the corridor. The intersections of MD 5/MD 471 and MD 5/MD 246 are projected to experience failing Levels of Service (LOS) in the design year of 2040. These traffic conditions are frequently what those who choose to live in rural areas seek to avoid. While the growth offers opportunities for these residents, it also serves as a growing detriment to quality of life in this rural community.

The Project is an important link to nearby military facilities and will be even more important as the area's population continues to swell. **The economic driver of St. Mary's County and lower Calvert County, Maryland, is NAS PAX, which supports \$2.4 billion in wages on an annual basis and \$7.5 billion in output to the Maryland state economy.**

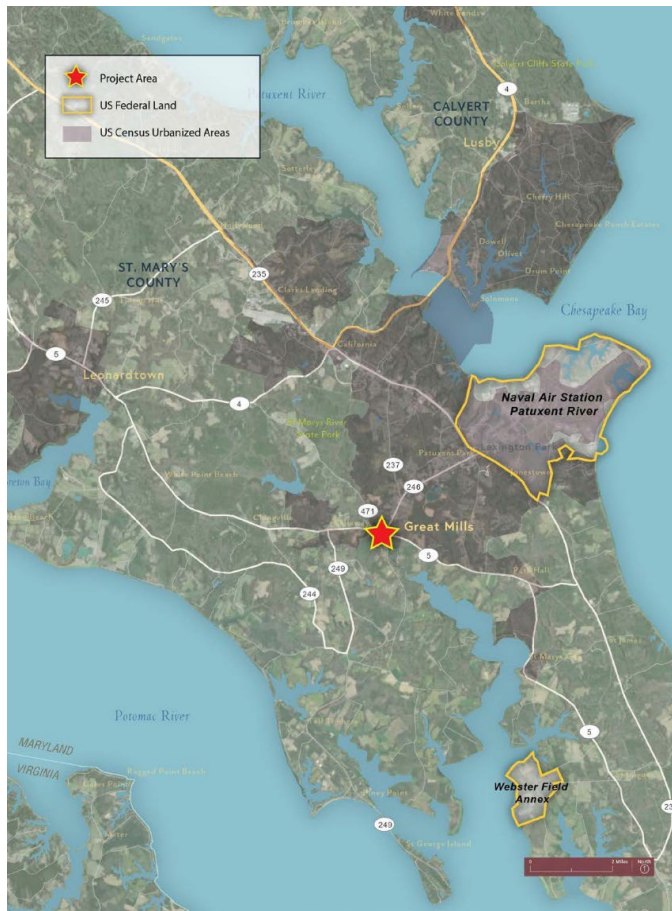


Figure 7: Military Installations Connecting to Great Mills Project

The NAS PAX installation includes five runways and approximately 935 buildings. Since its commissioning on April 1, 1943, NAS PAX has evolved into the Center of Excellence for Naval Aviation. **Approximately 80 percent of St. Mary's County's revenue is due to its direct and indirect economic relationship to NAS PAX.** The County's economic development plan, adopted in 2017, highlights the importance of NAS PAX to the County and showcases a commitment to preserving and protecting the mission of NAS PAX in the plan. Figure 7 shows the relationship between the project limits and the military installations; in short, access to the military installations is primarily via MD 235, MD 5/MD 246, or MD 4/MD 235. Consequently, the Project Area contains crucial connections for rural workers, base revenue, and product. The impact of the military installations is discussed in greater detail in Section 2: Project Location.



2. Project Location



PROJECT LOCATION

The Project is entirely within St. Mary's County, Maryland, and part of the State's 5th Congressional District, within the California-Lexington Park Urbanized Area (UZA), which is considered rural for the purposes of the BUILD grant. The California-Lexington Park UZA had a 2010 Decennial Census population of 105,143. Geospatial coordinates for the project are 38.24 latitude, -76.50 longitude.

As Figure 8 shows, the Project will improve the following intersections along MD 5 (Point Lookout Road):

- MD 471 (Indian Bridge Road/ Flat Iron Road)
- MD 246 (Great Mills Road)

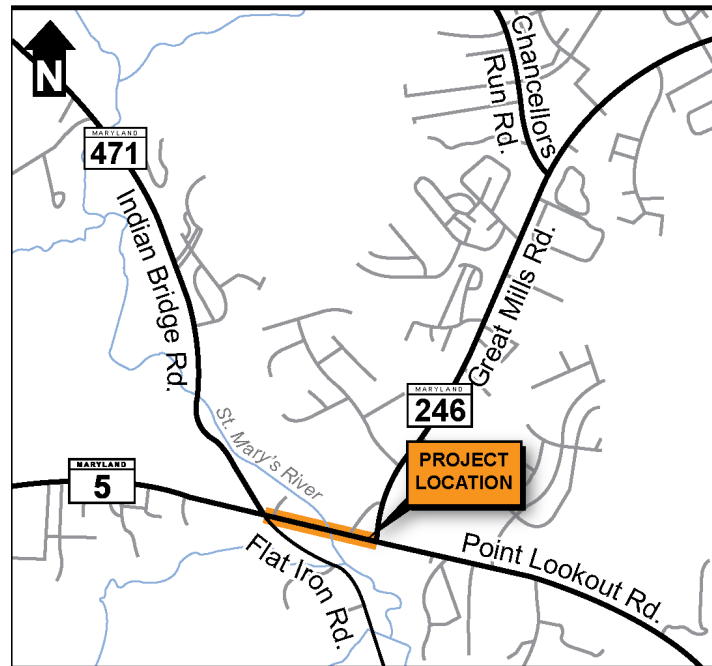


Figure 8: Project Location

The MD 5 Great Mills Improvement Project begins to the west on MD 5 at its intersection with Flat Iron Road and Indian Bridge Road and ends to the east at the intersection of MD 5 and Great Mills Road, approximately one-third of a mile in distance.

Today, the Great Mills Project Area comprises a two-lane Urban Other Principal Arterial (OPA), with either a wide shoulder open section or closed section with sidewalk, and uncontrolled access to the local businesses. The posted speed limit is 40 miles per hour (mph). Between the two intersections, MD 5 crosses the St. Mary's River on a bridge, MDOT SHA structure No. 1800500, which was originally built in 1913, and widened in 1955. The bridge has a width of approximately 48 feet and is currently in fair condition. The bridge replacement in this project is driven by the roadway typical section needs, as well as the need to reduce flooding on this 110-year-old bridge.

This section of MD 5 between MD 471 and MD 246 provides the most convenient roadway connection for the residents of Drayden, Piney Point, Tall Timbers, Valley Lee, and Callaway to reach northern and eastern destinations including Great Mills High School, Lexington Park, and NAS PAX.

The Great Mills project has two routes that feed MD 5: MD 471 and MD 246. MD 471 is a two-lane urban collector with a posted speed limit of 40 mph. The north leg of MD 471 leads to MD 4



(St. Andrews Church Road), past the St. Mary's River State Park, and the south leg leads to a mostly residential area along the Potomac River. MD 246 intersects with MD 5 to the north only, at a 3-way signalized intersection, about 1,400 feet east of MD 471. MD 246 is a four-lane Urban Principal Arterial with a posted speed limit of 40 mph and leads to Lexington Park and the NAS PAX, which are major trip destinations in the area.

Currently, there are limited sidewalks provided for pedestrians in the Project Area. Sidewalks are provided on the east side of the St. Mary's River bridge around the MD 246 intersection, while almost no sidewalk is provided on the west side of the bridge, except for small sections of driveway entrances to some of the businesses.

Public transportation is operated by the St. Mary's County Department of Public Works and Transportation, the St. Mary's Transit System (STS). STS operates the Route 3 buses along MD 5 and MD 246 between Leonardtown and Lexington Park via Great Mills during the weekday peak periods. The public transportation routes are also served by ADA paratransit services. With Great Mills High School along MD 246 and less than a mile from MD 5, multiple school buses use the MD 5/MD 246 intersection during the peak periods as well.

MILITARY INSTALLATIONS IN THE PROJECT AREA

In 1943, NAS PAX opened in St. Mary's County, just northeast of the proposed improvements in the Project. While the County had historically been rooted in agriculture and seafood industries since its founding, the base brought advanced science, research, development, and military personnel, and culture into the area.

In the 1990s, base realignment and closure (BRAC) throughout the nation led to growth in and around this base, and NAS PAX became home to the Naval Air Systems Command (NAVAIR) and the Naval Air Warfare Center Aircraft Division (NAWCAD), as well as 50 other tenants. NAVAIR is responsible for the research, design, and acquisition of naval aviation resources serving the Navy and Marine Corps. NAWCAD is the test, evaluation, development and research entity serving NAVAIR and is the base's and St. Mary's County's largest employer. As the base's importance and its

workforce grew, private industries also expanded or located in the County to serve its activities. What had been a two-lane road down to NAS PAX from Charles County and the Washington, D.C. area, transformed into the eight-lane road MD 235 is today.

Webster Outlying Landing Field (WOLF) is an extension of NAS PAX. At WOLF, NAWCAD employees conduct all combat identification, including identification of friend or foe, C5I (Command, Control, Communication, Computers, Collaboration and Information) systems, and all Navy air traffic

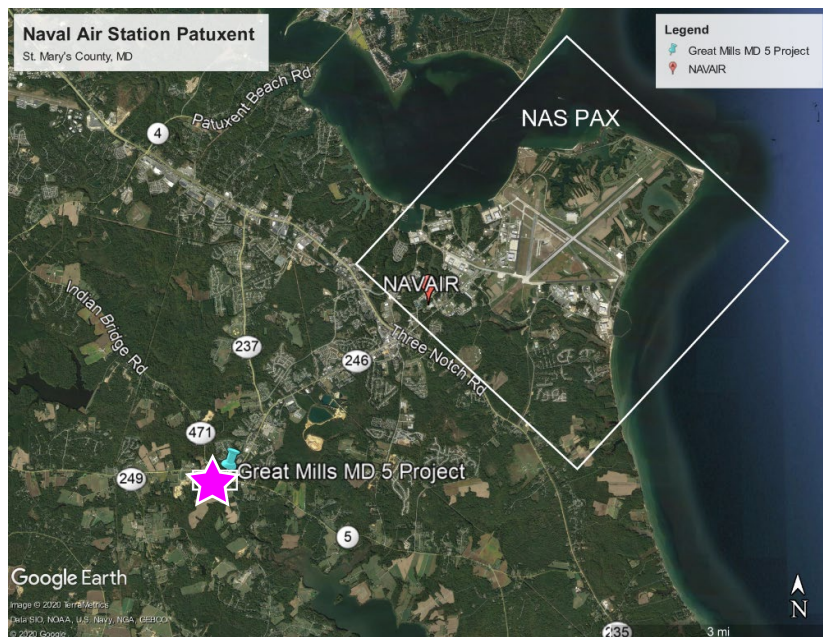


Figure 9: Great Mills Project in Relation to Naval Air Station Patuxent (NAS PAX)



control operations. Subject matter experts in lead systems integration, these employees conduct critical rapid engineering projects for all branches of the Department of Defense and perform over \$1 billion worth of work every year. WOLF is also home to the Unmanned Aircraft Systems Test Directorate, which does research, development, test and evaluation for all the Navy and Marine Corps unmanned aircraft systems.

Table 5: NAS PAX Personnel Totals (1985-2011)

	1985	1995	2005	2011
Labor Force	Estimate 1985	Estimate 1995	Estimate 2005	Estimate 2011
Contractor	4,004	5,400	9,400	10,053
Military	3,308	2,600	3,000	2,829
Civilian	3,893	4,300	7,800	9,541
Total	11,205	12,300	20,200	22,423

Today, 20,000 people work at NAS PAX, 1,550 people work at WOLF, and 300,000 people come into the region to visit the base annually. Table 5 illustrates the growth of NAS PAX between 1985 and 2011. Eighty percent of St. Mary's County's economy is derived from the flow of dollars from NAS PAX into salaries of the civilian and industry workforce. The Great Mills project improvements directly impact the commute times and safety for the workforce concentrated at NAS PAX and WOLF, thereby impacting the economic competitiveness of the County.

The Great Mills project's proximity to the base and its high-tech offerings make the project especially important to the local workforce. NAS PAX supports full spectrum acquisition management, research and development capabilities, air and ground test evaluation, aircraft logistics, and maintenance management. This synergy of missions supports land-based and maritime aircraft engineering, testing and engineering (T&E), integration, and life-cycle support for ship/shore electronics. Combined, these capabilities are unique within the Department of Defense and ensure NAS PAX's status as an aviation leader. The facilities and infrastructure on the installation are also used by foreign governments, academic institutions, and private industry for similar projects. NAS PAX is the only base on which these crucial activities occur. As a result, the County is a hub for STEM and high technology jobs that rivals only Silicon Valley in California and Seattle/Bellevue, Washington.

Much of the workforce lives north of the Project Area, meaning thousands of people are driving through the Project Area every morning and every afternoon. The time spent in traffic is consistently referenced as an impediment to an exceptional quality of life. As in any region, the ability to get people quickly to and from their destinations is imperative.



Figure 10: NAS PAX Queue at Gate 2



The Great Mills project feeds NAS PAX's Gate 2, which is located across MD 235 (Three Notch Road) from Great Mills Road. Over 10,000 vehicles a day pass through this gate alone. Much of the traffic volume travels through the Great Mills project limits, causing these failing levels of service and significant queues during both the morning and afternoon commute. Furthermore, most of the 1,500 employees at WOLF traverse Route MD 5 to St. Inigoes. A military construction (MILCON) project for upgrades to Gate 2 at NAS PAX has been a priority for several years. With these improvements, Gate 2 will become the Main Gate with 24-hour access and that increases the likelihood that traffic volumes will increase within the Great Mills project limits. Figure 10 shows the queue at Gate 2 located at NAS PAX.

Consequently, the Project will accommodate the increased flow of traffic and reduce queuing onto the public roadways. The Project's ability to process greater traffic volumes will improve the relationship between NAS PAX and the community, as well as provide members of the public a less congested route to work and retail establishments outside the gates.

RELATIONSHIP TO DESIGNATED INVESTMENT AREAS

In addition to its relationship to nearby military installations and businesses that drive the County's growth, the **Project Area is inside the State of Maryland-designated Sustainable Community and the State of Maryland designated Priority Funding Area. The Project is in the County's Development District and 1.5 miles from the federally-designated Opportunity Zone.** Much of the traffic that passes through that intersection will also drive through the Opportunity Zone.

OPPORTUNITY ZONE

The State of Maryland has recognized the importance of St. Mary's County to Southern Maryland and the greater state and regional economy. **The State has designated the area between MD 5 and MD 235 as an "Opportunity Zone" and the Great Mills project limits serve as a portion of the southern border of the zone, and facilitates safe, efficient movement to, through, and from this zone.** The Opportunity Zone program is a nationwide initiative administered by the U.S. Treasury created under the 2017 Tax Cuts and Jobs Act. The program provides federal tax incentives for investment in distressed communities over the next 10 years. Areas designated as Opportunity Zones will be able to reap the benefits of capital gains to help redevelop underserved communities. Figure 11 shows the Great Mills project in relation to the Opportunity Zone Communities within the area.

In combination with the Lexington Park Development District Master Plan for a development district and the needs of a growing County workforce and population,

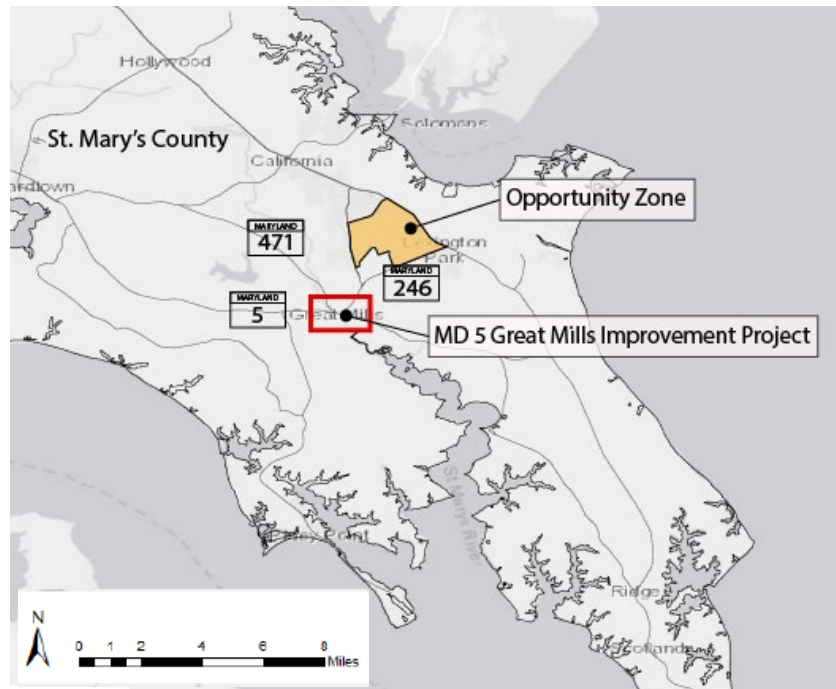


Figure 11: Opportunity Zone Map



the project's proximity to the Opportunity Zone further underscores the economic development potential within the Great Mills project limits. The Great Mills project, consequently, will help facilitate the movement of people and goods within the areas, making this Opportunity Zone and development district a place most attractive to potential employers and investors.

RELATIONSHIP TO OTHER IMPROVEMENTS

The Metropolitan Commission (METCOM), the provider of public Water and Sewer Utility services in St. Mary's County, is currently replacing and relocating the sewer pumping station located at 20254 Point Lookout Road, Great Mills, on the northwest corner of the MD 5 bridge over the St. Mary's River within the project's limits. The Great Mills project replaces a bridge that experiences flooding and the relocation of the pump project provides the space on the bridge site needed to reconstruct the bridge.

The East Run Medical Center sits just 0.8 miles north of the project location. The new development provides a community-based outpatient clinic that serves veterans as well as expanded residential development around the East Run Medical Center. Improving traffic conditions and multimodal connectivity facilitates better access to this important center providing essential medical services.

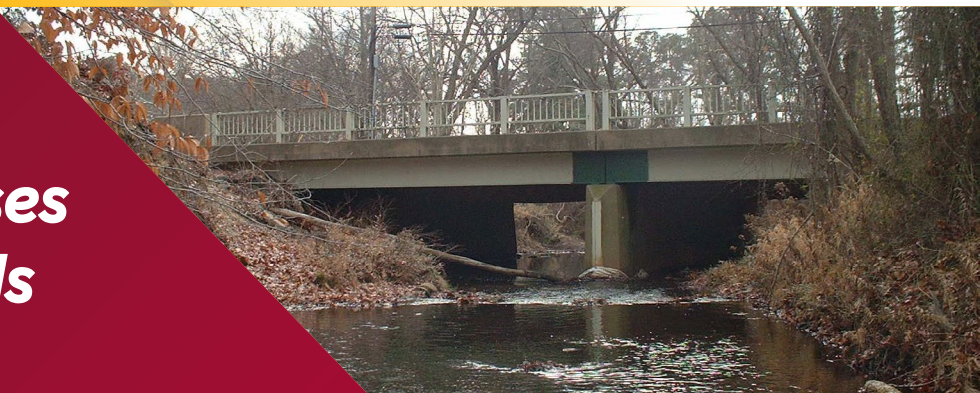
Another effort that is related to improving the functionality of the intersection located in the Great Mills project is the collaboration between St. Mary's County Government and MDOT SHA that has resulted in the installation of a camera at the MD 5/Great Mills Road intersection to monitor traffic operations, facilitating efficient response to incidents and crashes.



Figure 12: Great Mills wastewater pumping station



3. Grant Funds, Sources & Uses of All Project Funds



This application from MDOT SHA and St. Mary's County requests \$10.03 million in BUILD funds for the Project with a total cost of \$17 million. Non-federal funds from the State account for 41 percent of project costs. BUILD funding accounts for the remaining 59 percent of the Great Mills project. Table 6 presents the funding sources and uses.

While addressing these infrastructure needs has been a top priority for several years, this project has faced barriers to completion due to funding availability, as County and State resources are limited. Since applying for BUILD funds in 2019, the project has continued to advance through design, but still is unable to proceed due to funding constraints. **Without this grant, it is unknown how many years it will take MDOT and St. Mary's County to fill the remaining funding gap. During this time, the growing population and increasing access needs for the military installations will only exacerbate the current congestion and safety problems in the Project Area.**

PROJECT COSTS

Spending by Project component is shown in Table 6. A detailed cost estimate for each component is available in the appendices. These cost estimates are based on Preliminary Engineering and include reasonable contingency factors appropriate to the scope of each component. The cost of the Project is lower than estimated in the 2019 BUILD application because the design has advanced in the past year and cost estimates have been refined accordingly.

Table 6: Project Budget Summary by Use and Source

Category	State Funded	Federally Funded	Total Cost
Design and Engineering	\$ 1,400,000	-	\$ 1,400,000
Right of Way Acquisition	\$ 1,000,000	-	\$ 1,000,000
Construction Costs	\$ 4,600,000	\$ 10,000,000	\$ 14,600,000
Bridge	\$ 700,000	\$ 1,500,000	\$ 2,200,000
Maintenance of Traffic	\$ 600,000	\$ 1,200,000	\$ 1,800,000
Drainage	\$ 400,000	\$ 900,000	\$ 1,300,000
Landscape	\$ 200,000	\$ 200,000	\$ 400,000
Traffic Design/Sign/Marking	\$ 200,000	\$ 500,000	\$ 700,000
Utilities	\$ 1,100,000	\$ 2,500,000	\$ 3,600,000
Roadway	\$ 800,000	\$ 1,800,000	\$ 2,600,000
Overhead 15.3%	\$ 570,000	\$ 1,430,000	\$ 2,000,000
Project Total	\$ 6,970,000 (41%)	\$ 10,030,000 (59%)	\$ 17,000,000

St. Mary's County and MDOT understand that cost overruns on any of the components of the Project will be their responsibility.



4. Selection Criteria



SAFETY

The Project will improve safety on MD 5 by reducing the number, rate and severity of motor vehicle crashes, and improve capacity of an evacuation route.

The Project Area is one of the most dangerous roadway segments in St. Mary's County. From 2009 to 2018, 162 crashes occurred within a half-mile of the project segment around the intersections of MD 5 with MD 246 and MD 471, including 69 serious injuries.

The crash rate in the Project Area is 40 percent higher than the statewide average for similar roadways. The overall crash rate from 2017 to 2019 within the Project Area is 316.8 crashes per 100 million vehicle miles (mvm) traveled, compared to the statewide crash rate of 116.8. per 100 mvm traveled. Rear-end, sideswipe and left-turn collisions were the most frequent types of crashes. Table 7 shows the crash rate by type in the Great Mills Project Area compared to the state crash rate for similar routes. Figure 13 shows crashes in the Project Area between 2015 and 2017.

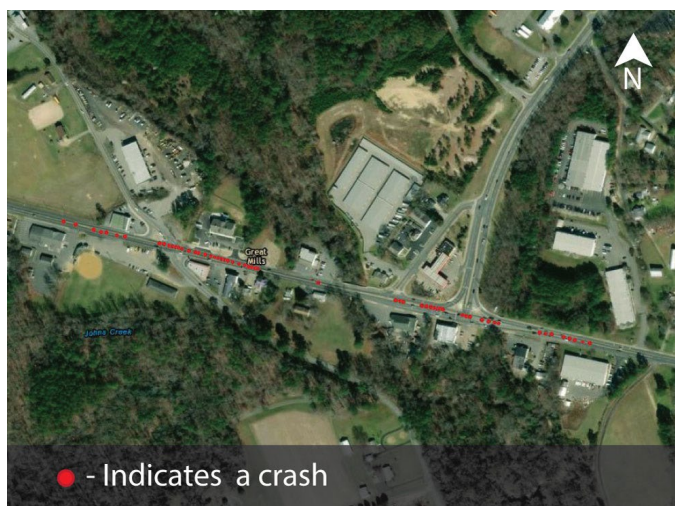


Figure 13: Crashes on MD 5

Table 7: Crash Rate by Type, 2017 to 2019

Crash Type	Great Mills Project Area Crash Rate	State Crash Rate
Rear-end	126.7	53.8
Sideswipe	25.3	10.5
Left-turn collision	25.3	13.0

Long traffic queues at intersections, poor visibility at the MD 5/ MD 471 intersection and a high density of roadway access points to adjacent businesses contribute to the high crash rate within the Project Area. MD 5 includes single left-turn lanes at the four-way signalized intersection with MD 471, which present queue jumping issues at the intersection.



The Great Mills project addresses the factors that contribute to the route's high crash rate. The expansion of the roadway to include an additional outside travel lane in addition to the improved facilities for bicycles and pedestrians, are projected to reduce crashes by an average of about 20 percent, or an average of three incidents annually. The prevention of these crash incidents is calculated to be \$1.3 million in discounted 2018 dollars.

Cyclist and Pedestrian Safety

The Great Mills Project Area currently does not have continuous sidewalks and the existing sidewalks are interrupted by many curb-cuts leading into business parking lots and residential driveways, creating opportunity for conflict between pedestrians and vehicles. The Project Area also does not currently have bicycle lanes, causing cyclists to ride in narrow shoulder space or within the roadway lanes. While MDOT SHA does not have data on pedestrian and bicycle crashes, the current conditions present critical safety concerns for pedestrians and cyclists traveling on the roadway.



Figure 14: MD 5 Between MD 471 and MD 246 Lacks Continuous Sidewalks

The Great Mills project will improve pedestrian safety by adding a five-foot wide continuous sidewalk along both sides of MD 5, building ADA ramps at all pedestrian crossings, and installing pedestrian crossing signals with countdown timers at all crosswalks. **The project will improve cyclist safety** by adding five-foot wide bicycle lanes in both directions. These improvements will eliminate gaps in pedestrian and cycling infrastructure and ensure that neither pedestrians nor cyclists need to travel in vehicular travel lanes with high-volume traffic.

Emergency Evacuation

MD 5 is one of only two evacuation routes off the St. Mary's County peninsula and the only evacuation route that leads away from the National Capital Region (NCR) to the Southeast. MD 5 would facilitate an evacuation across the Potomac River via the Harry W. Nice Memorial/Thomas "Mac" Middleton Bridge (Nice Bridge) into Virginia. In a national emergency scenario, the Project Area in Great Mills would be a critical bottleneck for the estimated 21,000 people who would need access to the MD 5 evacuation route. Expanding the capacity of this road would reduce evacuation time and allow travelers to more quickly travel to safety.

STATE OF GOOD REPAIR

Current Condition

Bridge No. 1800500 is rated in fair condition based on National Bridge Inventory (NBI) ratings of 6-deck, 5-superstructure, and 5-substructure. The majority of the National Bridge Elements (NBE) that quantify the overall condition of the individual components of the bridge are in Condition States 1 and 2. Overall, the bridge is considered to be in a state of good repair (SOGR). MDOT SHA Office of Structures defines a structure as being in a SOGR when its overall structural condition does not have any impact to its functionality or long-term service life. Structures in a SOGR have no load restrictions resulting from a deteriorated structural component; mobility is not affected as vehicles, bicyclists, and pedestrians can safely travel across a structure without restriction.



A structure in a SOGR can have localized defects and deficiencies, but these types of deficiencies and defects can be addressed by routine maintenance, minor rehabilitation, and preservation activities.

Minor rehabilitation work will continue to be performed as needed to maintain the bridge in a state of good repair. The bridge is not in the 6 year Consolidated Transportation Program (CTP) for replacement or major rehabilitation as part of MDOT SHA's Structures System Preservation Program nor is it in the 10-year forecast for the program.

However, the Project will replace this bridge because of flooding issues associated with the current bridge that render it impassible in heavy rainfall events. Currently, the bridge (Figure 15) does not convey the two-year flood level without overtopping, while the proposed structure does. On the existing conditions, the probable frequency of road closure at the bridge due to flooding is more than 50 percent, or more than one closing every two years. For the proposed bridge this probability is reduced to between 20 to less than 50 percent. When the bridge is closed due to flooding, motorists must take a much longer route to get around the bridge closure, adding 14 miles to the total distance traveled.



Figure 15: High Water Levels at Existing Bridge After Storm

Impact to Route with Bridge Closure

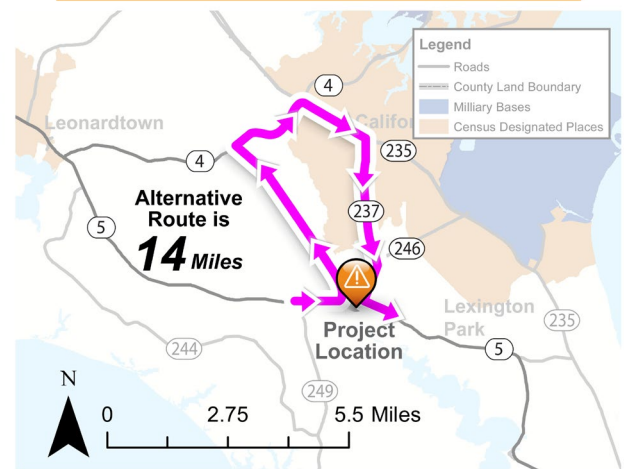


Figure 16: Impact to Route with Bridge Closure

How the Project Will Improve Estimates of Impacts on Long-Term Cost Structures/Overall Life-Cycle Costs

Based on the available pavement performance data, the existing pavement on MD 5 is in mediocre functional condition and good structural condition. The estimated design life for base widening is 25 years and for rehabilitation (patch, mill & overlay) is 15 years. Replacing the bridge will reduce the need to perform minor rehabilitation to maintain the bridge in an overall state of good repair. Current minor rehabilitation work includes a \$75,000 project to perform steel repairs and install additional grout bags for scour protection. The bridge was last painted in 2012. The life span of a typical paint coating system is 20 years so in the next 10-15 years the bridge will need to be painted again at a cost of approximately \$500k in 2020 dollars. The bridge deck is currently in satisfactory condition, but over the next 10-20 years, deck patching and a new overlay will likely be required to extend the service life of the deck. For a structure of this size, this work is estimated to cost approximately \$200K. To maintain the bridge in a state of good repair, approximately \$1M will need to be invested over next 10-20 years in preservation and minor rehabilitation work.



Figure 17: Major Employers in St. Mary's County

ECONOMIC COMPETITIVENESS

Rapid Growth in Population and Tech Industry

Nestled just 38 miles southeast of Washington, D.C. lies St. Mary's County – home to NAS PAX, WOLF, over 200 high-tech firms, Maryland's first Federal Aviation Administration (FAA) unmanned aircraft system test site, and a workforce that has grown by 19 percent over the past decade. In a study conducted by 24/7 Wall St. that reviewed U.S. cities' labor forces to determine the cities with the most high-tech jobs, California-Lexington Park, MD was found to be the city with the highest share of tech-jobs in the County – with nearly a quarter (24.8 percent) of the area's entire workforce employed in a STEM field.

The County's rapid growth in the technology industry has also contributed to its large influx in population. Since 2010, St. Mary's County has experienced population growth at a rate of 7.15 percent since 2010 – fifth highest in the State of Maryland - well above the U.S. national average of 5.96 percent. In addition, by 2040, the Maryland Department of Planning has predicted that St. Mary's County will see an increase in population by nearly 40 percent (Figure 18), the largest increase of any county within the state.

The MD 5 corridor has been one of the primary areas most affected by the increase in population. Since 2010, the stretch of MD 5 between MD 246 and MD 471 has experienced a 27 percent increase in Annual Average Daily Traffic (AADT). The increase in AADT can be attributed to heightened U.S. military activity at NAS PAX and WOLF near Great Mills that has spurred on an influx of military personnel, contractors, and associated services. The BRAC in the mid-1990s generated an increase of about 64 percent in military and civilian employment at NAS PAX as the air station was selected to host the headquarters of the Naval Air Systems Command (NAVAIR) and Naval Air Warfare Center Aircraft Division (NAWCAD). This had a profound effect on the California-Lexington Park urbanized area, which today has the second-highest employment cluster strength (0.80) in the state of Maryland

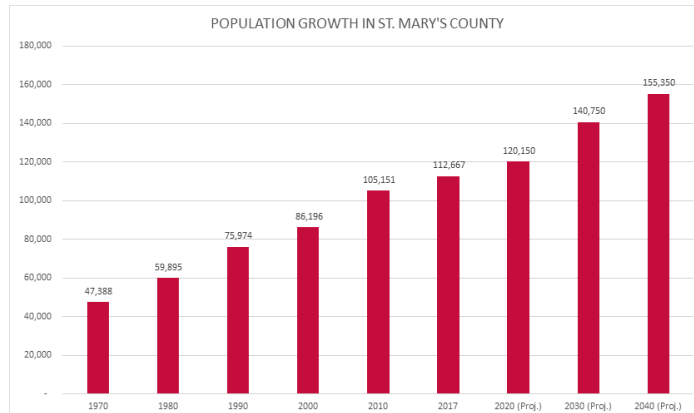


Figure 18: Historic and Projected Population Growth in St. Mary's County



— just behind Montgomery County. Currently, the three military installations employ approximately 21,500 people, including civilian employees, contractors, and active duty personnel. Figure 17 highlights several major employers in the County. Restaurants and retail services have also boomed in the area to accompany this growth.

Access to these employment centers is critical to job retention and growth. Figure 19 shows the number of residents commuting into St. Mary's County, out of St. Mary's County and within the county (2017 Longitudinal Employer Household Dynamics (LEHD) Survey commuting data).

In a study that looked at the impact of commuting, survey results showed that over a quarter (26 percent) of the survey respondents had gotten to the point of looking for another job due to their commute. In addition, a recent study in Maryland reveals that traffic congestion is a top priority for the workforce in greater Washington, D.C. region; potential employees and employers look to St. Mary's County, and the Project Area as a “best of both worlds” alternative to locating in the greater Washington, D.C., region, with lower housing costs, a less stressful lifestyle, and shorter commutes. Due to a lack of modal options on St. Mary's roadways, the MD 5 Great Mills Improvement Project will ensure prospective employers and employees can achieve the quality of life, high tech job opportunities, and ease of access to life's opportunities that they have come to expect in the Project Area.

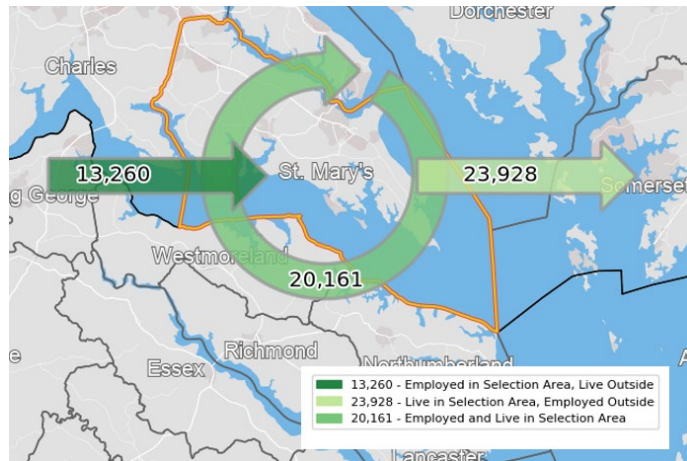


Figure 19: Longitudinal Employer Household Dynamics (LEHD) Survey Commuting Data, 2017

Currently, nearly 20 percent of the St Mary's County population lives within 2 miles of the proposed project site. These numbers will continue to rise; estimates suggest that **over 6,000 new jobs will enter Southern Maryland** (St. Mary's, Charles and Calvert Counties) by 2024. This will make it difficult for residents to access essential destinations such as jobs, schools, and activity centers along MD 5. Based on 2017 inflow/outflow job count data, the California-Lexington Park metropolitan area currently sees an influx of 13,260 employees that live outside the area, an outflow of 23,928 employees that live within the area, and a constant workforce of 20,161 that lives and works in the California-Lexington Park metropolitan area. Figure 19 presents commuting data for the County.

Economic Development Investments Impacted by the Project

Given NAS PAX's role in the economy of the region, the County is working to integrate with the installation's high technology specialization. The County, as a result, has made economic development investments in light manufacturing. For example, the JF Taylor Engineering & Integration production facility manufactures finished products or parts, primarily from previously prepared materials with a focus on unmanned aerial vehicles and aircraft prototypes, training systems, and aircraft modifications kits and parts. Allowed uses at the facility include processing and fabrication.

Additionally, engineering, design development and integration of communication and intelligence systems at WOLF are expected to increase. There are no more available facilities or space on the base to support its expansion. At the same time, other private contractors are looking for space along the Great Mills Corridor for their expansion in light manufacturing. **The County views the Great Mills Corridor as ideally situated to meet the demand for light manufacturing** and the Project will assist in this expansion.



There are also **two new housing developments** that are close to the Great Mills project. The approval and planning process for sixty townhouses, known as Bay Ridge Estates, is underway at 45671 Pleasant Mill Drive, Great Mills. A Planned Unit Development (PUD), entitled Wildewood, covers approximately 400 acres and is envisioned to contain 40 acres of commercial development and 1,600 housing units. Both developments will require access to the Great Mills corridor and the intersection within the project limits will be a critical thoroughfare.

The Project also **facilitates development at the County's airport**. Several key economic initiatives are underway at the St. Mary's County Airport, including construction of new airport West Apron and new airport electrical vault; relocation of Airport Road in preparation for taxiway relocation; continued construction of airport office buildings; creation of an Innovation District Master Plan; and Transformation of the Southern Maryland Higher Education Center to the University of Maryland at Southern Maryland. The airport is an economic engine and center of academic excellence in the County, as well as a source of recreation for the general aviation community.

ENVIRONMENTAL SUSTAINABILITY

The Project Area is located within the St. Mary's River and Johns Creek 100-year floodplain, which experiences flooding on an annual basis. MD 5 is consistently impacted during flood events, seeing up to 16 inches of water on the roadway during major storms. MDOT SHA closes segments of MD 5 from time to time in response to flooded roadway conditions and the St. Mary's Bridge is particularly vulnerable to high rainfall events. The bridge approaches in each direction flood

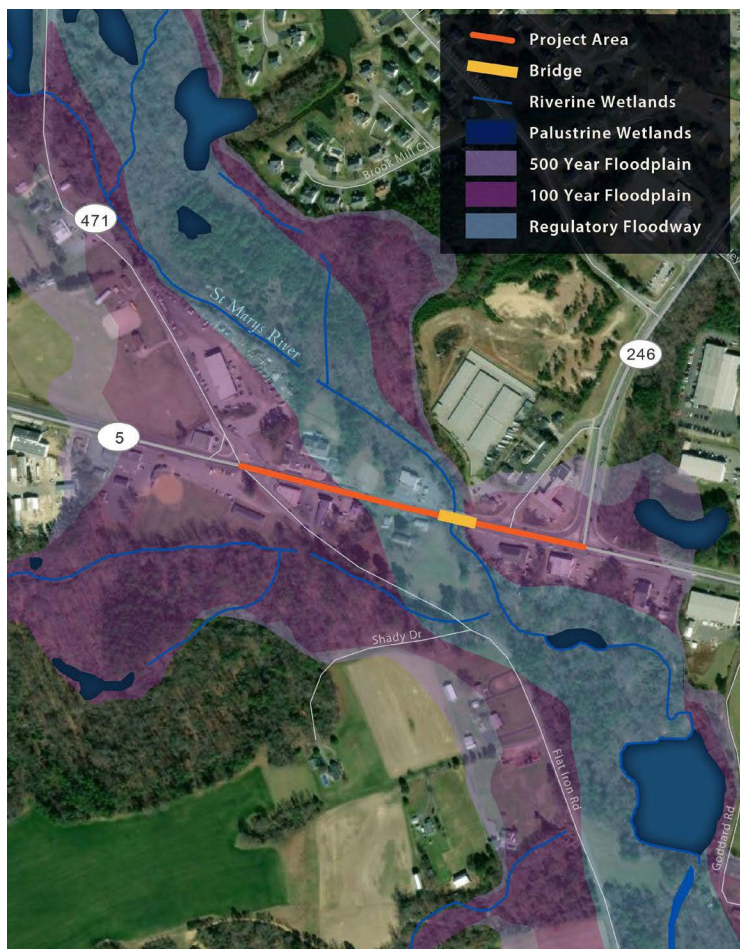


Figure 20: Watersheds within Project Limits

at least every other year, requiring MDOT SHA to close the bridge to traffic. A preliminary hydraulic analysis indicated that a five-year storm event would bring the water level of the St. Mary's River over the height of the bridge deck and a two-year storm would elevate water levels to the substructure of the bridge. The impacts of flooding on the bridge and MD 5 roadway disrupts traffic flow, creates unsafe conditions for commuters and creates water quality concerns associated with stormwater runoff.

The areas that are most acutely affected by flooding and that experience yearly flood-related closures include:

- St. Mary's River Bridge approaches
- MD 5 from MD 246 to the western edge of the project area
- A 1/3-mile stretch north along MD 246 and MD 471

The Project addresses these flooding concerns and improves stormwater



management on MD 5 within the project limits and at the St. Mary's River Bridge to reduce flooding in the roadway. The project scope includes drainage improvements, installation of new stormwater management facilities, and landscaping to retain rainwater runoff from MD 5. The Project's bridge improvements would redesign the bridge approaches to manage stormwater runoff and mitigate flooding.

Reducing Congestion-Related Emissions and Dependence on Oil

The widening of MD 5 to an undivided four-lane closed section roadway, along with the introduction of pedestrian and cycling infrastructure, will **alleviate congestion and reduce congestion-related emissions** associated with idling traffic. As residential and commercial developments continue to grow near the Project Area, the project improvements will increase roadway and intersection capacity for growing traffic volume and reduce congestion, especially during peak travel periods.

The Project introduces pedestrian and cycling infrastructure to MD 5 within the Project limits, offering non-motorized transportation alternatives to reduce dependence on vehicular travel. Filling gaps in pedestrian and cycling infrastructure connectivity on MD 5 will provide residents of nearby residential areas with the opportunity to travel by foot or bicycle to commercial centers and community services.

Related Improvements that Enhance Environmental Sustainability

METCOM is undergoing a project to relocate, replace and upgrade an existing waste water pump station, which is currently within the footprint of the proposed bridge. The new facility will be relocated out of the St. Mary's River floodway, thus reducing the risk of sewage entering the waterway, and out of possible future MDOT SHA construction. The project is projected to be completed by the fall of 2020.

Other Project Benefits for the Environment

The St. Mary's River embankments adjacent to the project site experience considerable erosion, diminishing water quality by introducing sediment and pollutants to the waterway. The project will include the construction of stream riffles upstream of the bridge to minimize erosion caused by high stream velocities.

Improvements to stormwater management infrastructure on MD 5 will also **reduce the amount of runoff into wetlands adjacent to the project site**. National Wetland Inventory (NWI) and DNR mapping identifies wetlands located along MD 5, east of MD 246, and north and south of MD 471, within the vicinity of MD 471. The project will create a closed-section roadway in which curbs and gutters are installed to contain and control the flow of stormwater to a suitable outfall, limiting the amount of stormwater entering wetlands and waterways from the road.

The St. Mary's River embankments adjacent to the MD 5 crossing have experienced considerable erosion. In particular, the banks on the left upstream side of the crossing have eroded back to the point of being 15-foot near-vertical banks with minimal vegetation stabilizing the bank. Additionally, the bridge abutments are set perpendicular to MD 5 traffic flow (Figure 21), resulting in approximately 58 degrees of skew to the river's flow direction. This skew has resulted in increased scour along the left cell of the bridge and increased deposition in the right cell. Continued erosion of the banks and scour at the crossing results in excessive sediment entering the St. Mary's River. Reducing sediment deposition is one of the Chesapeake Bay's Total Maximum Daily Load (TMDL) requirements. Excessive sediment has the potential to smother sea grasses and bottom dwellers that are vital to the health of the tidal estuaries and Bays ecosystem. Additionally, further erosion and scour can result in potential failure of the bridge abutments, potentially leading to significant traffic impacts along an already strained corridor.



The project proposes to skew the bridge abutments so they are no longer perpendicular to MD 5 traffic and perform minor realignment of the stream channel near the crossing to improve the hydraulic conveyance of the crossing. This realignment will reduce shear stresses at the crossing minimizing the potential for future erosion of the stream banks, directly improving downstream water quality and preventing any potential failure of the crossing as a result of the erosion. Additionally, the reduced shear stresses will also improve conditions for vegetative establishment along the river banks and floodplain helping stabilize the banks against continued erosion. Furthermore, the project proposes to stabilize stream riffles upstream of the bridge to help minimize the potential for further erosion as a result of high stream velocities.

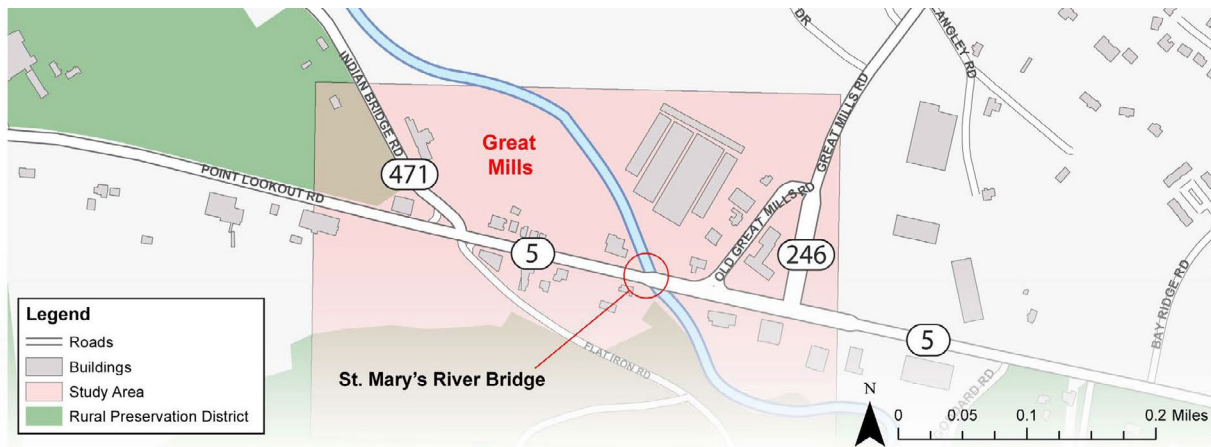


Figure 21: Bridge Location

QUALITY OF LIFE

Expanding Access for Communities in St. Mary's County

While the Great Mills Project provides critical connections between military installations and growing businesses in the area, the corridor also connects important community landmarks, ranging from housing to public services to recreation spots. Land use within the vicinity of the Great Mills project limits is predominately commercial and residential, interspersed with wooded areas. Residential dwellings are mostly located along MD 5, west of the St. Mary's River crossing. Institutional and public land uses in the Project Area include the Old Holy Face Church, the Great Mills Post Office, Great Mills High School and the Little Flower School. Smaller areas of other land uses are spread throughout the Project Area.

Recreational facilities interfacing with the project's limits include Great Mills Canoe and Kayak Launch, James W. Henderson Park, Great Mills Swimming Pool, and St. Mary's River State Park. Improvements to the intersection, bridge, sidewalks, and bicycle facilities within the project limits will **help residents gain access to these community facilities and recreational amenities.**

Increasing Transportation Choices for Individuals

The County has been steadily building and expanding road, pedestrian, and bicycle networks to meet the demand of the population. The project will add bike lanes to improve the National Park Service-designated Southern Maryland Potomac Heritage Trail on-road bicycling route that runs on MD 5 from the county seat of Leonardtown south to Point Lookout. The addition of bicycle lanes at this congested and hazardous section of the corridor will improve safety for bicyclists and motorists. The addition of continuous sidewalks on both sides of MD 5 will provide pedestrian connections between residents and local businesses. ADA-compliant sidewalks will improve access for wheelchair users.



In addition to sidewalks, the Project will improve the safety and convenience of using public transportation. St. Mary's Transit System is a small fixed route and demand-response bus transit agency with a total of 19 vehicles and 380,000 unlinked passenger trips per year (Figure 22). STS operates its Great Mills Route (Route 3) bus service Monday through Friday along MD 5 from 6:00 a.m. to 7:00 p.m. Two bus stops are located within the Project Area at the MD 5/MD 246 intersection on the east and west side of MD 5, respectively, at the Sheetz Gas and Convenience Store. Notably, while Route 3 is the only transit route through this area, passengers can transfer from this route to seven of the other nine routes, making it a critical connection for destinations throughout the County. Further, while bus ridership on the other STS routes has declined, matching national trends, ridership on Route 3 has been increasing.

A fully developed, multi-modal transportation system has the potential to induce growth, helping implement St. Mary's County's land use plans in the Project Area and beyond. It will shape development in the Lexington Park Development District and determine the area's character and quality of life. The result will be a coordinated, integrated, and safe transportation system which supports community revitalization, economic development, and environmental stewardship.

The Project Area is also within the Lexington Park Development District (the District boundary is similar to the priority funding area boundary). The 2010 St. Mary's County Comprehensive Plan envisions the Lexington Park Development District as the principal growth area for the County. The County updated the Lexington Park Development District Master Plan in 2015 to shape and direct growth in the next 30 years.

The Lexington Park Development District Master Plan focuses on the development district becoming the County's mixed-use center. NAS PAX is the anchor on the MD 235 side of the district and MD 5 is at the other end. The improvement in the Great Mills project is essential for allowing connectivity for all types of transportation: transit, bicycle, pedestrian, car, and carpool.

The Plan has designated that most of the MD 5 Great Mills Project Area is within the Great Mills Road Corridor (MD 246) focus area. The District Master Plan identifies the corridor as one of the focus areas having significant existing development that would benefit from infill development, redevelopment, design, and infrastructure enhancements.

INNOVATION

Advanced Utility Relocation

MDOT SHA and the design team have been working closely with utility owners within the project limits. The coordination started early in the design phase to clarify relocation requirements, right-of-way needs, design/construction time frame and potential procurement issues for each

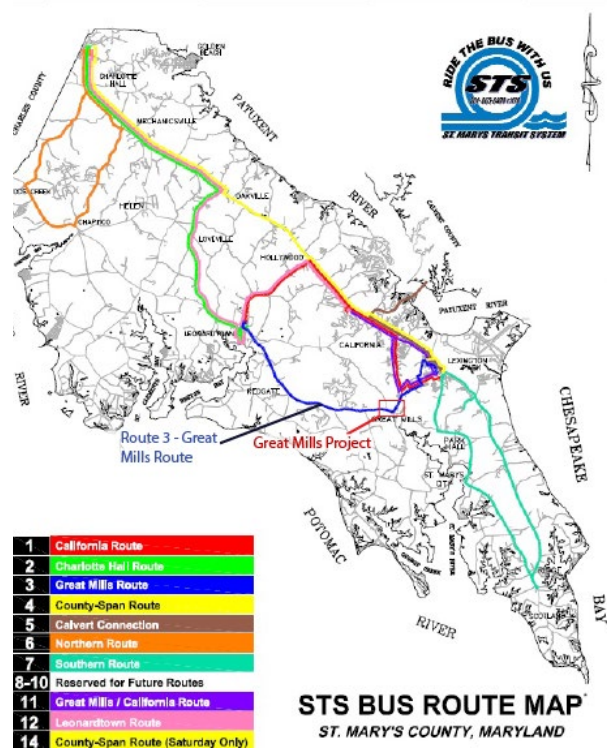


Figure 22: St. Mary's County Transit Bus Routes



impacted utility. This partnering allows MDOT SHA to secure the ROW and easement needed for relocated utility lines and structures, and also to come up with a realistic project schedule that accounts for all the utility efforts to happen before roadway improvement and stream stabilization can occur. Innovative methods were also discussed and incorporated to expedite design, permitting and construction of the project. These methods include, but are not limited to, coordinating between MDOT SHA Office of Structures and Verizon to attach communication conduits to the proposed bridge structure, incorporating METCOM sewer relocation in MDOT SHA contract to better coordinate design and avoid potential conflicts, submitting integrated permit application to MDE for Waters of the United States (WUS) disturbance to reduce permit time needed for individual utility owners, and installing pole-mounted switches to minimize service interruptions during construction.

PARTNERSHIP

MDOT SHA has several strong partnerships in this Project. Local, state, regional and federal government partners are supporting the project through planning and permitting coordination. Elected officials also provide full support for the project because it is a high priority for their constituents. Letters of support from these partners are included in the appendices and at www.mdot.maryland.gov/BUILD. Please note that a letter of support from the St. Mary's County Chamber of Commerce was sent directly to USDOT.

- **St. Mary's County** lists the Project as its top transportation priority in its Priority Funding Letter to the Department of Transportation.
- **St. Mary's Metropolitan Commission (METCOM)** is relocating a wastewater pump station currently located in the Project Area to remove obstacles to the replacement of the St. Mary's River Bridge.
- **Calvert-St. Mary's Metropolitan Planning Organization (C-SMMPO)** highlights the Great Mills project in the C-SMMPO Long-Range Plan.
- **Maryland Department of the Environment (MDE)** will issue the State's wetland/waterway/floodplain authorization in close coordination with the federal government (specifically, the U.S. Army Corps of Engineers) to ensure regulated nontidal wetlands, nontidal wetland buffers and waterways, including the 100-year floodplain, located in the Project Area are protected from loss and degradation.
- **U.S. Army Corps of Engineers (USACE)** will authorize the proposed work occurring in waters of the United States, including wetlands, to ensure the project does not cause more than minimal adverse environmental effects, individually and cumulatively, under Section 404 of the Clean Water Act and/or Section 10 under the Rivers and Harbors Act. Federal authorization of the project will be closely coordinated with MDE, as well as additional federal and state agencies, including the U.S. Fish and Wildlife Service (USFWS) and Maryland Department of Natural Resources (MD DNR).
- **Maryland Department of Natural Resources (MD DNR)** will serve as a commenting resource agency throughout the state and federal wetland and waterway permit reviews. MD DNR will provide information on important fisheries resources and state and federally listed rare, threatened and endangered plant or animal species. They will recommend instream work restrictions, stringent erosion and sediment controls methods and other Best Management Practices (BMPs) to protect the Project Area's aquatic resources.
- **U.S. Fish and Wildlife Service (USFWS)** will serve as a commenting resource agency during the federal wetland and waterway permit review to ensure compliance with Section 7 of the Endangered Species Act. USFWS will provide information on the presence of species which are federally listed or proposed for listing as endangered or threatened within the vicinity of the Project Area.



5. Environmental Risk Review



With a BUILD grant in place, the MD 5 Great Mills Improvement Project is poised to implement crucial congestion remediation and safety mitigation and increase travel time reliability in this important rural corridor. **MDOT SHA and St. Mary's County have the technical and financial capacity to undertake this project quickly and meet all milestones: BUILD funding will provide the final missing piece to unlock this project's positive impacts.**

PROJECT SCHEDULE AND MILESTONES

This Project is ready to advance, with Preliminary Engineering and right-of-way acquisition funded in the FY 21-24 C-SMMPO TIP. If a BUILD grant is awarded, the construction funding will be amended into the C-SMMPO TIP.

The MDOT SHA will have all necessary pre-construction activities completed by July 18, 2022 . All necessary activities will be complete to allow BUILD Transportation grant funds to be obligated sufficiently in advance of the statutory deadline of September 30, 2022, and any unexpected delays will not put the funds at risk of expiring before they are obligated. Further, all real property and right-of-way acquisition necessary for project improvements and utility relocations will be complete in a timely manner in accordance with 49 CFR part 24, 23 CFR part 710, and other applicable legal requirements. Finally, the project can begin construction quickly upon obligation of grant funds and funds will be spent expeditiously once construction starts, with all funds expended by September 30, 2027. The project schedule is presented below.

The Project will be advertised and construction services procured under a traditional design-bid-build process. This will allow the project to be constructed for the lowest possible cost. When the MD 5 Great Mills Project receives Categorical Exclusion approval in Fall 2020 as anticipated, the milestone dates for the project schedule are presented in the table below:

Table 8: Project Timeline

Project Activity	Timeline
Advertisement	November 15, 2022
Bid Opening	January 12, 2023
Notice to Proceed	March 20, 2023
Substantial Completion	November 14, 2025



APPROVALS AND PERMITS

State and Local Planning Approvals

The Project has garnered broad public support from the community and businesses alike. It has been programmed into the C-SMMPO long-range plan in five funding phases. Currently funded phases (Preliminary Engineering (PE) and Right-of-Way (ROW)) are in the FY2021-FY2024 Calvert-St. Mary's MPO (C-SMMPO) Transportation Improvement Program (TIP). If a BUILD grant is awarded, the construction funding will be amended into the C-SMMPO TIP.

Required Approvals and Permits

MDOT SHA is seeking a Categorical Exclusion for minor impacts (0.1-acre fee simple, 0.1-acre TCE) to park and recreational resources and approval is expected in Winter 2020/2021. The Project is also at the end of the Preliminary Engineering phase, moving forward to 65 percent design complete in Summer 2020.

ENVIRONMENTAL RISK

MDOT SHA completed the MD 5 Great Mills Feasibility Study (January 2015) to identify transportation improvements to the section of MD 5 in Great Mills from MD 471 to MD 246. The feasibility study compiled data from existing sources and documented new information (e.g., traffic data) to effectively provide a roadmap for future phases of a MDOT SHA project planning study. The primary goal of the concepts developed in the feasibility study was to explore options to improve traffic operations, and secondly to alleviate roadway capacity and design deficiencies.

NEPA Status

Following the development of the January 2015 Feasibility Study, the Project moved into the NEPA/planning phase and project planning activities commenced. A Purpose and Need Study was finished in March 2016. An Alternatives Public Workshop was then held in March 2016 to present the project's purpose and need and receive public feedback on the improvement alternatives under consideration. In 2016, the project coordinated with the Smart Growth Working Group. The project was found to comply with the Priority Funding Areas law and no additional coordination was required.

In 2017, MDOT SHA coordinated with Maryland Historical Trust to determine a finding of "No Adverse Effect" made on nearby architectural resources (Cecil's Mill Historic District, Holy Face Catholic Church and Little Flower School). FHWA concurred with de minimis finding for minor impacts to church property in August 2017. In 2018, a Phase 1 archeological survey was completed. No sites were identified. Phase II would be required if the project expanded into Cecil's Mill Historic District.

A Public Notice published in August 2015 announced the initiation the MD 5 Great Mills Improvement Project. A community survey was mailed out in the Summer of 2015 to citizens within the project study area. MDOT SHA received over 300 responses. Traffic congestion was cited as the greatest need (53 percent of respondents identified it as one of multiple issues) with the addition of travel lanes being a preferred improvement (65 percent of respondents identified it as one of multiple improvement types). Approximately 50 people attended the Alternatives Public Workshop for the project held on March 15, 2016. The purpose of the Workshop was to familiarize the public with the project, review the planning process and solicit comments on the proposed alternatives.



TECHNICAL CAPACITY

- Design will be completed and plans, specifications and estimates (PS&E) by July 2020
- ROW acquisition will be complete by Spring 2020

FINANCIAL CAPACITY

MDOT is responsible for building, operating, and maintaining a safe and seamless transportation network that links Maryland with the rest of the country and the world. MDOT directs and oversees the planning, construction, and operation of Maryland's highways, transit, maritime, rail, and aviation facilities, as well as the Maryland Motor Vehicle Administration. The Transportation Business Units (TBUs) are funded by a common funding source: Maryland's Transportation Trust Fund.

The Transportation Trust Fund is separate from the State's general funds and its revenues are dedicated to improving and operating Maryland's transportation network. The five TBUs and the Maryland Transportation Authority all work together to assist each other in the development of a seamless transportation system designed to fuel Maryland's economy and enhance its citizens' quality of life.

The Maryland Department of Transportation has developed a \$16.325 billion 6-year program. The MDOT FY2020 to FY2025 6-year CTP dedicates over \$6.585 billion to MDOT SHA's capital program, with approximately \$4.507 billion committed to safety, congestion relief, and community enhancements. Despite this significant investment, the transportation needs around the state continue to outpace available resources. The BUILD funding request would allow MDOT SHA to accelerate this project and continue momentum from planning to design and construction.

RISK AND MITIGATION STRATEGIES

The following table presents the primary risks for the MD 5 Great Mills Improvement Project, the potential impacts these risks may present, and mitigation strategies for each.



Table 9: Project Mitigation Strategies

RISK	IMPACT	MITIGATION STRATEGY
A Joint Permit Application will be required from MDE and USACE due to bridge replacement associated impacts to St. Mary's River.	<ul style="list-style-type: none">• Application will require agency review and 30-day state public notice; additional time may be needed to address comments on stream stabilization work associated with the new bridge.• Wetland mitigation will be required.	<ul style="list-style-type: none">• Project schedule accounts for review time.• Advanced mitigation credit is available at an existing mitigation site in the watershed.
Proposed project occurs in a FEMA floodplain designated as Zone AE, with floodway. A CLOMR may be required if the proposed bridge would result in an increased Base Flood Elevation (BFE) of more than zero foot.	<ul style="list-style-type: none">• Project schedule could be impacted since coordination with FEMA to obtain CLOMR takes about a year.	<ul style="list-style-type: none">• It is anticipated based on all modeling performed to date, and the fact that we are improving hydraulic efficiency of the bridge that there will not be a CLOMR required. Instead a LOMR will be required following construction to update FEMA maps based on the new data. Therefore, the FEMA coordination task is not anticipated to affect the project schedule.
Three to four business displacements are anticipated.	<ul style="list-style-type: none">• Start of construction date could be impacted since ROW needs to be cleared before construction can start. Anticipate approximately 18 months to clear ROW.	<ul style="list-style-type: none">• Design schedule is accelerated, which allows team to begin getting ROW plats earlier in the process.
Utility impacts are anticipated. Existing county sewer line is in conflict with the proposed bridge and will require relocation.	<ul style="list-style-type: none">• Construction schedule could be delayed.	<ul style="list-style-type: none">• Design schedule is accelerated, which allows team to begin coordination with utility companies earlier in the process. County sewer pumping station is currently being relocated, so is not anticipated to be impacted by the project.



6. BENEFIT – COST ANALYSIS



A benefit-cost analysis (BCA) was conducted for the MD 5 Great Mills Improvement Project for submission to the U.S. Department of Transportation (U.S. DOT) as a requirement of a discretionary grant application for the BUILD 2020 program. The analysis was conducted in accordance with the benefit-cost methodology as outlined by U.S. DOT in the 2020 Benefit-Cost Analysis Guidance for Discretionary Grant Programs. The period of analysis corresponds to 25 years and includes 5 years of design and construction and 20 years of benefits after operations begin in 2026.

The capital cost for this Project is expected to be \$17.0 million in undiscounted 2020 dollars. At a 7 percent real discount rate, these costs are \$12.1 million in 2018 dollars. Net operations and maintenance costs are projected to average \$55,800 per year in undiscounted 2018 dollars in the “Build” and “No Build” scenarios. Over the entire 20-year operations period, these costs effectively result in a net zero change in operations & maintenance costs. Finally, net reductions in rehabilitation and replacement costs are expected to total approximately \$0.3 million in 2018 dollars over this same period, or just over \$0.1 million when discounted at 7 percent.

The Project is expected to generate \$18.2 million in discounted 2018 dollars in benefits using a 7 percent discount rate. The roadway and bridge improvements on MD 5 will reduce the number of crash incidents within the project segment and reduce road congestion due to under-capacity. This leads to an overall project Net Present Value of \$6.1 million and a **Benefit Cost Ratio (BCR) of 1.50**. As such, the Project is expected to generate economic benefits that outweigh its costs. The overall project benefit matrix can be seen in Table 9.

Travel time savings and the reduction in crashes produce the greatest quantified benefits, illustrating the Project’s focus on facilitating economic competitiveness and improving safety for road users and pedestrians. The travel time savings includes in-vehicle travel time savings for drivers and passengers of autos. A reduction in travel time translates into more time available for work, leisure, or other activities. The reduction in crashes due to lane expansion and roadway improvements will mean fewer incidents of property damage and injuries for vehicle users and pedestrians.



Table 10: Project Impacts and Benefits Summary, Monetary Values in Millions of Discounted 2018 Dollars

Merit Criteria	Benefit	Monetized Value (with 7% Discount Rate)
Economic Competitiveness	Travel time savings	\$ 17.2
	Change in Vehicle O&M costs	(\$ 0.4)
Safety	Crash reduction	\$ 1.2
State of Good Repair	Facility operations & maintenance/ rehabilitation savings	\$0.1
Total Benefits		\$18.2
Total Capital Costs		\$12.1
Benefit-Cost Ratio		1.50



7. APPENDICES



A. Benefit-Cost Analysis Technical Memorandum

B. Benefit-Cost Analysis Spreadsheets

C. Letters of Support

- See additional letters of support at www.mdot.maryland.gov/BUILD

D. State Commitment

E. Additional Project Documents

- See <https://mdot-sha-md5-md471-to-md246-sm210a21-maryland.hub.arcgis.com/> for additional Project documents.

